

[0055] FIG. 28 is an electrical schematic for signal distribution and routing via alternative buses.

[0056] FIG. 29 shows an embodiment of the electronic display in a rolled state ready for deployment in a truss frame that supports the motor and for ease of storage, transport and set up.

[0057] FIG. 30 is a perspective view of connected hinges with attached power and signal cable and associated connector.

[0058] FIG. 31 illustrates in an exploded perspective view a preferred embodiment of connector and attached hinge in FIG. 30 showing the electrical and mechanical connections to the electronic display board.

[0059] FIG. 32 illustrates in an exploded cross-sectional elevation view of the preferred embodiment of the connector of FIG. 31 deployed with hinged or cable connections between elongated blades that support the LED display boards.

[0060] FIG. 33 is another exploded perspective view of a portion of FIG. 31 to show an additional component.

[0061] FIGS. 34A and 34B are cross-sectional elevation through portion of the display in FIG. 31-33 with FIG. 34A being adjacent to the hinge but through the signal-power module only and FIG. 34B being through the hinge.

[0062] FIG. 35 are plan views of a single and multiple blade assemblies showing various the connector of FIG. 30-34 as deployed in various means for connecting the multiple blades to assemble the electronic display.

[0063] FIGS. 36A and 36B are plan views of a single and multiple blade assemblies showing various the connector of FIG. 30-34 as deployed in various means for connecting the multiple blades to assemble the electronic display.

[0064] FIG. 37 is an exploded perspective view to illustrate another embodiment of the invention in which elongated blades supporting the LED display boards are tiled together on a rigid frame.

[0065] FIG. 38A is a front elevation view of a protective cover or wear block and

[0066] FIG. 38B is a cross-sectional elevation thereof as mounted on a display board.

[0067] FIG. 39 illustrates in an exploded cross-section elevation view of a more preferred embodiment of the connector of FIG. 30 that deploys gaskets and is further deployed with hinged or cable connections between elongated blades that support the LED display boards.

[0068] FIG. 40A and FIG. 40B respectively illustrate more preferred embodiments of connectors that deploy gaskets as cross-sectional elevations through portion of the display in FIG. 31-33 with FIG. 40A being adjacent to the hinge but through the signal-power module only and FIG. 40B being through the hinge.

DETAILED DESCRIPTION

[0069] Referring to FIGS. 1 through 40, there is illustrated therein a new and improved large screen portable LED display, generally denominated 100 herein.

[0070] In accordance with a first embodiment of the present invention, FIG. 1 shows a first embodiment of the display 100. The display 100 is comprised of a flexible electronic display surface 30 capable of being wound or wrapped around an axle 10 for storage and transport. The flexible electronic display surface 30 has a plurality of horizontally elongated relatively rigid elements 31 in a vertical array, each element containing a plurality of LED's arrayed to form regularly spaced pixel

32, the LED's having power and signal control interconnections for image display. There is a flexible connection via a connector 40 between horizontally adjacent rigid elements of Flexible Electronic Display surface 30. Such pixels 32 are shown in FIG. 15 in more detail.

[0071] In the embodiment of FIG. 1, support cables 20 are attached to the rear of each of the relatively rigid elements 31, to effectively connect them in a hinged arrangement at the fixed spacing necessary to define adjacent pixels 32. One end of these laterally spaced cables 20 are then attached to the axle 10, while the opposite end of the cable 20 are attached to an elongated bar or pull bar 60. Axle 10 is optionally hollow for storing at least a portion of the power and signal distribution cables 704.

[0072] It is also preferable that a roll wheel for taking up the cable 20 be mounted on the axle 10. In addition there are holes for cables 20 to enter axle 10. FIG. 4 shows both the support cables 20 and a cable to stick or blade clamp, attached pull bar 60, as well as a Stick Controller/Power Supply to the motor for winding the Power/Signal Cable (Stick-Stick) 505 with the flexible electronic display 100.

[0073] FIGS. 5A and B illustrate the electronic display 100 when extended from Canister 21 by rotation of Axle 10 including the Power/Data Distributor Node 708 with Power and data cables inside shaft or axle 10.

[0074] FIG. 5A is a cross-section of the canister with the electronic display 100 extended upward taken as section A-A in FIG. 3. FIG. 5B is a cross-section of the canister with the electronic display 100 extended upward taken as section B-B in FIG. 3 show the Flexible Electronic Display Surface 30 extended by the Support Cable 20.

[0075] A plurality of vertical array of relatively rigid carrier elements disposed adjacent to each other. Each rigid element being connected to the laterally adjacent element in the adjacent column by a flexible connector. A canister 21 is provided for containing the axle in rotary engagement at opposite ends and containing the coiled or rolled up display, as shown in FIGS. 5 and 7.

[0076] FIG. 6A-6D illustrates in further detail one embodiment for assembling the LED array on the horizontally elongated relatively rigid elements 110 in a vertical array, each element containing a plurality of LED's arrayed to form regularly spaced apart pixel 32, the LED's having power and signal control interconnections 140 for image display, which may include a carrier, controller, power supply of which there are optionally multiple controller with one or more power supplies.

[0077] FIG. 7 is a cross-section of the canister 21 with the electronic display 100 retracted therein as taken as section A-A in FIG. 3. Pull bar 60 is coupled to the last vertically adjacent set of the rigid horizontal display elements 130. As support cable 20 is wound about axle 10 to roll up flexible electronic display 100 on itself, an alignment ramp 702 is preferably deployed about a portion of axle 10 to guides the power and data cables 704 inside of axle 10 along roll wheel 703.

[0078] FIG. 8 illustrates one scheme for the distribution of the power from the Generator Set 801 via rectifiers 802 to the motor 803, which are optional in communication via a trailer controller 804. There is also a power cable generator failover switch 80, as well as an electromechanical interface 806, an optional customer interface 807 (such as an RJ45 interface) and preferably a rectifier fail switch 808.